

EPD

Environmental Product Declaration

Ege®

Epoca Ribs WT

surface pile weight: 584 g/m²

pile material: polyamide 6.6, continuous dyed

backing: woven textile backing

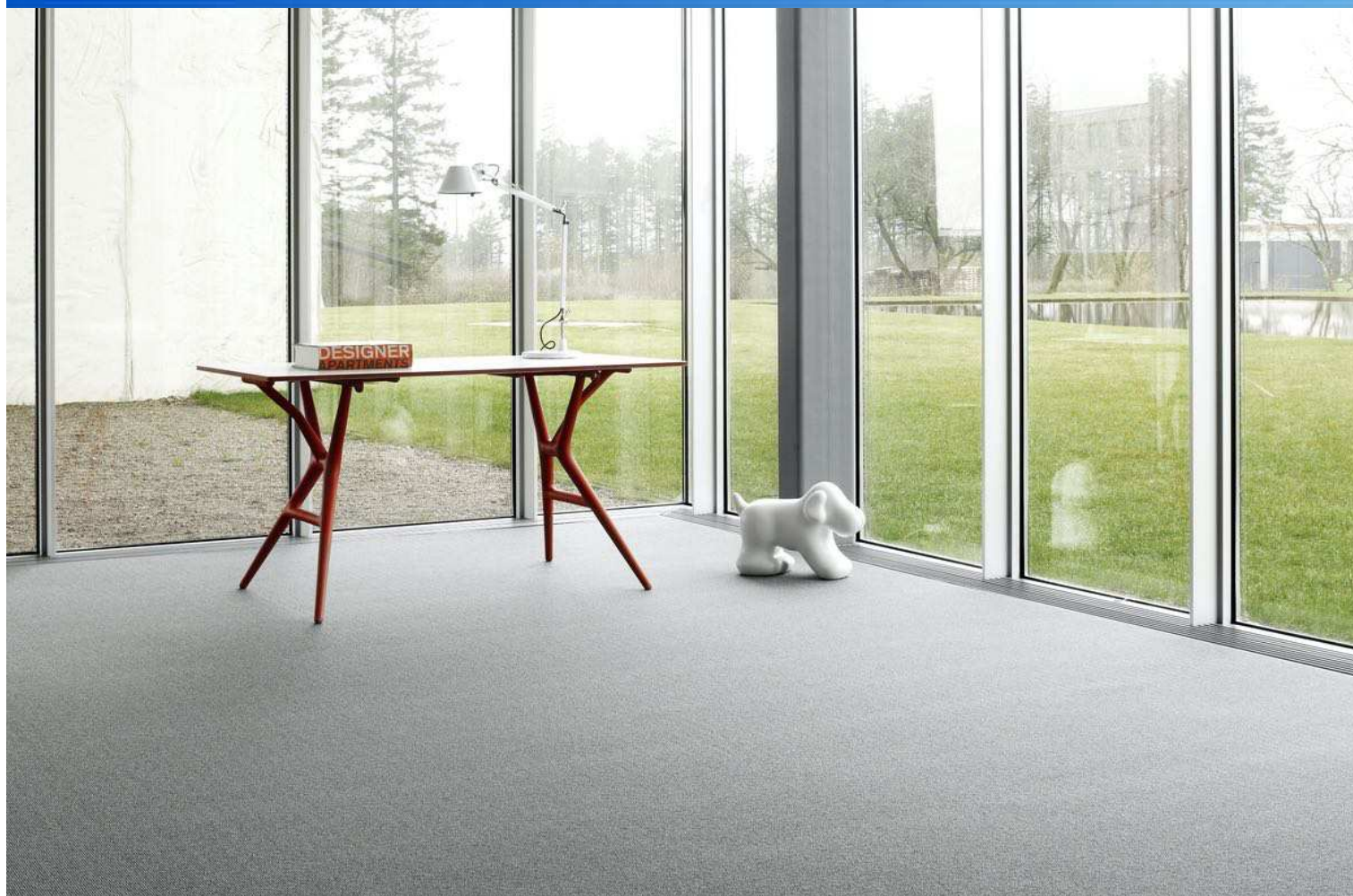


GUT/Prodis ID:

9FF8C130

**These EPD data are only valid in combination with
the environmental product declaration EPD-EGE-20200165-CCC1-EN published by Institut
Bauen und Umwelt e.V. (IBU) and a GUT/Prodis license**

**This data set gives product specific LCA results
based on the calculation procedure described in the above mentioned EPD.**



General Information on use stages B1 to B7

LCA results indicate environmental impacts resulting from use stage B1 to B7.

For textile floor coverings only modules B1 (use) and B2 (maintenance) are taken into account. Modules B3 (repair), B4 (replacement), B5 (refurbishment), B6 (operational energy use) and B7 (operational water use) are not relevant during the service life of textile floor coverings.

Module B1 'use' includes emissions to the indoor air during the use stage. Relevant emissions only occur in the first year of life (see LCA: Calculation rules).

Module B2 'maintenance' includes cleaning procedures.

Reference service life (RSL)

The actual service life of textile floor coverings depends on a wide range of various impact factors such as the allocation of the application area to the use class, maintenance, intensity of use and most often fashion and building related aspects. Therefore, technical service life cannot be defined for textile floor coverings.

Total environmental impacts from module B2

Total environmental impacts have to be calculated by taking into account the service life of textile floor coverings. Therefore, the assumed real life (ARSL) has to be used for the calculation of total environmental impacts taking into account the expected use conditions (see RSL). Module B2 (maintenance) is depending on the service life.

Values for module B2 given in the result tables are indicated for the period of one year. They have to be multiplied by the ARSL of the textile floor covering taking into account building related aspects.

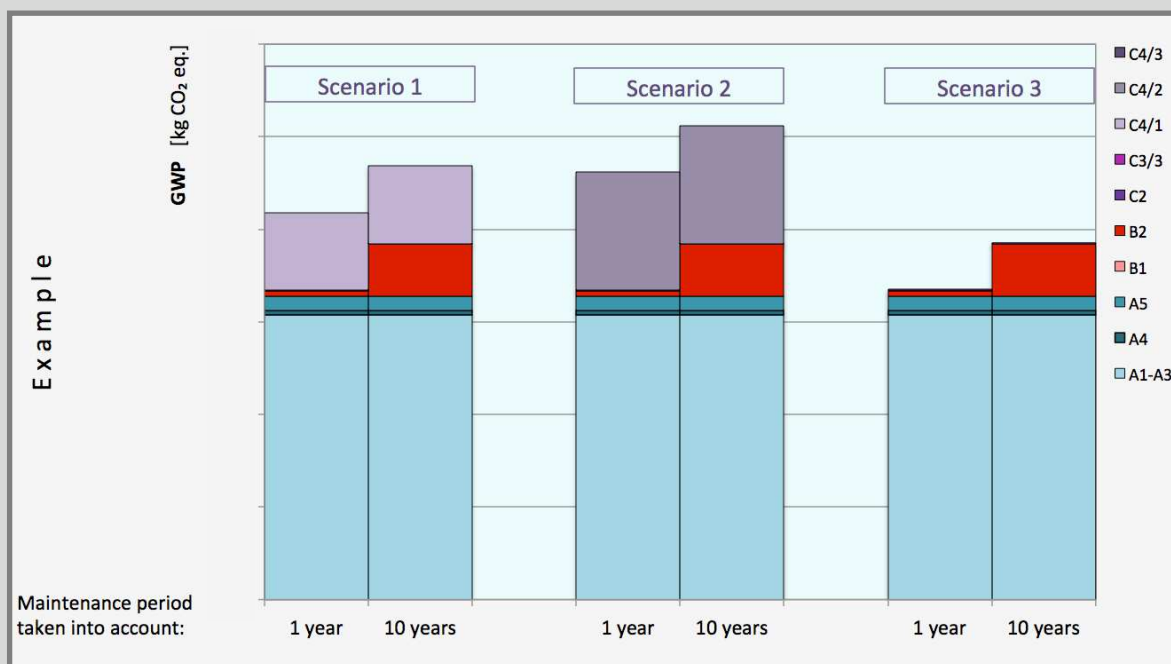
The influence of the maintenance period on the Global Warming Potential (GWP) of the whole life cycle of a textile floor covering - differentiated for 3 end-of-life scenarios - is illustrated in the graph below.

3 end-of-life scenarios:

Scenario 1: 100 % Landfill disposal

Scenario 2: 100 % Municipal waste incineration

Scenario 3: 100 % Recycling in the cement industry



Graph 2: Global Warming Potential (GWP) - aggregation of module A to module C - taking into account a maintenance period of 1 year compared to a maintenance period of 10 years - for the three declared end-of-life scenarios.

1. Information on the product Epoca Ribs WT

Product description

Name	Value	Unit
Type of manufacture	tufted broadloom	-
Yarn type	polyamide 6.6, continuous dyed	-
Total pile weight	750	g/m ²
Surface pile weight	584	g/m ²
Dead pile weight	166	g/m ²
Secondary backing	woven textile backing	-
Product Form	rolls 400 cm width	-
Max. total carpet weight	2510	g/m ²

Base materials / Ancillary materials

Name	Value for category	Unit
Polyamide 6.6	29,9	%
Polyester	4,8	%
Polypropylene	3,6	%
Mineral filler	22,5	%
Aluminiumhydroxide	27,4	%
Polymer dispersion (solid content)	11,4	%
Additives	0,5	%
Recycled content out of total weight	4 %	%

LCA: Declared Unit

Name	Value for category	Unit
Declared unit	1,0	m ²
Conversion factor to 1 kg	0,40	m ² /kg
Mass reference	2,5	kg/m ²

LCA: Scenarios and additional technical information

All indicated values refer to the declared functional unit

Transport to the construction site (A4)

Name	Value for category	Unit
Litres of fuel (truck, EURO 0-6 mix)	0,0059	l/100km
Transport distance	700	km
Capacity utilisation (including empty runs)	55	%

Installation in the building (A5)

Name	Value for category	Unit
Material lost	0,23	kg

Maintenance (B2)

Indication per m² and year

Name	Value for category	Unit
Maintenance cycle (wet cleaning)	1,5	1/year
Maintenance cycle (vacuum cleaning)	208	1/year
Water consumption (wet cleaning)	0,004	m ³
Cleaning agent (wet cleaning)	0,09	kg
Electricity consumption	0,314	kWh

End of Life (C1-C4)

Name	Value for category	Unit
Collected as mixed construction waste (scenario 1 and 2)	2,51	kg/m ²
Collected separately (scenario 3)	2,51	kg/m ²
Landfilling (scenario 1)	2,51	kg/m ²
Energy recovery (scenario 2)	2,51	kg/m ²
Energy recovery (scenario 3)	1,26	kg/m ²
Recycling (scenario 3)	1,25	kg/m ²

LCA: Results for Epoca Ribs WT

(calculated with a total pile weight of 750 g/m²)

The declared result figures in module B2 have to be multiplied by the assumed service time (in years) of the floor covering in the building considered (see chapter: 'General Information on use stages B1 to B7').

Information on un-declared modules:

Modules B3 - B7 are not relevant during the service life of the carpet and are therefore not declared.

Modules C1, C3/1, C4/2 and C4/3 cause no additional impact and are therefore not declared.

Module C2 represents the transport for scenarios 1, 2 and 3.

Description of the system boundary

(X = Included in LCA; MDN = Module not declared)

State of production	State of construction phase	State of use	End of life state	Credits and loads after life												
<div>raw material supply</div> <div>A1</div> <div>X</div>	<div>transport</div> <div>A2</div> <div>X</div>	<div>manufacturing</div> <div>A3</div> <div>X</div>	<div>delivery</div> <div>A4</div> <div>X</div>	<div>installation</div> <div>A5</div> <div>X</div>	<div>use</div> <div>B1</div> <div>X</div>	<div>maintenance</div> <div>B2</div> <div>X</div>	<div>repair</div> <div>B3</div> <div>MND</div>	<div>replacement</div> <div>B4</div> <div>MND</div>	<div>renewal</div> <div>B5</div> <div>MND</div>	<div>energy use</div> <div>B6</div> <div>MND</div>	<div>water use</div> <div>B7</div> <div>MND</div>	<div>stop of use / demolition</div> <div>C1</div> <div>MND</div>	<div>transport</div> <div>C2</div> <div>X</div>	<div>waste management</div> <div>C3</div> <div>X</div>	<div>disposal</div> <div>C4</div> <div>X</div>	<div>reuse, recovery and recycling potential</div> <div>D</div> <div>X</div>

Results for the LCA - Environmental impact: 1 m² floor covering

Parameter	Unit	A1-A3	A4	A5	B1	B2	C2	C3/2	C3/3	C4/1	D/A5	D/1	D/2	D/3
GWP	[kg CO ₂ -eq]	1,01E+01	1,50E-01	1,47E+00	0,00E+00	2,92E-01	8,31E-03	2,98E+00	1,38E-02	1,69E-01	-2,27E-01	0,00E+00	-9,84E-01	-4,06E-01
ODP	[kg CFC11-eq]	6,12E-08	2,47E-17	5,50E-09	0,00E+00	1,21E-08	1,36E-18	1,13E-15	4,12E-16	5,49E-16	-3,21E-15	0,00E+00	-1,37E-14	-2,72E-15
AP	[kg SO ₂ -eq]	1,36E-02	6,35E-04	1,53E-03	0,00E+00	1,16E-03	3,50E-05	2,41E-03	2,89E-05	4,59E-04	-2,86E-04	0,00E+00	-1,23E-03	-1,64E-03
EP	[kg PO ₄ 3-eq]	2,85E-03	1,59E-04	3,30E-04	0,00E+00	3,17E-04	8,79E-06	6,11E-04	3,20E-06	4,80E-04	-3,57E-05	0,00E+00	-1,54E-04	-1,89E-04
POCP	[kg ethen-eq]	1,82E-03	-2,67E-04	1,53E-04	6,29E-05	1,48E-04	-1,48E-05	1,47E-04	2,06E-06	5,18E-05	-2,60E-05	0,00E+00	-1,13E-04	-1,83E-04
ADPE	[kg Sb-eq]	1,42E-05	1,27E-08	1,29E-06	0,00E+00	4,43E-06	7,02E-10	1,01E-07	4,61E-09	3,28E-08	-4,24E-08	0,00E+00	-1,82E-07	-3,75E-07
ADPF	[MJ]	1,85E+02	2,05E+00	1,70E+01	0,00E+00	6,76E+00	1,13E-01	1,74E+00	1,52E-01	2,52E+00	-3,18E+00	0,00E+00	-1,38E+01	-3,42E+01

Caption: **GWP** = Global warming potential; **ODP** = Depletion potential of the stratospheric ozone layer; **AP** = Acidification potential of land and water; **EP** = Eutrophication potential; **POCP** = Formation potential of tropospheric ozone photochemical oxidants; **ADPE** = Abiotic depletion potential for non-fossil resources; **ADPF** = Abiotic depletion potential for fossil resources

Results for the LCA - Resource use: 1 m² floor covering

Parameter	Unit	A1-A3	A4	A5	B1	B2	C2	C3/2	C3/3	C4/1	D/A5	D/1	D/2	D/3
PERE	[MJ]	2,88E+01	1,16E-01	2,63E+00	0,00E+00	1,20E+00	6,38E-03	2,67E-01	1,09E-01	1,83E-01	-8,55E-01	0,00E+00	-3,66E+00	-6,17E-01
PERM	[MJ]	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
PERT	[MJ]	2,88E+01	1,16E-01	2,63E+00	0,00E+00	1,20E+00	6,38E-03	2,67E-01	1,09E-01	1,83E-01	-8,55E-01	0,00E+00	-3,66E+00	-6,17E-01
PENRE	[MJ]	1,55E+02	2,06E+00	2,17E+01	0,00E+00	7,86E+00	1,13E-01	3,77E+01	3,60E+01	2,60E+00	-3,92E+00	0,00E+00	-1,70E+01	-3,46E+01
PENRM	[MJ]	3,96E+01	0,00E+00	-3,79E+00	0,00E+00	0,00E+00	0,00E+00	-3,58E+01	-3,58E+01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
PENRT	[MJ]	1,95E+02	2,06E+00	1,79E+01	0,00E+00	7,86E+00	1,13E-01	1,90E+00	2,47E-01	2,60E+00	-3,92E+00	0,00E+00	-1,70E+01	-3,46E+01
SM	[kg]	1,11E-01	0,00E+00	9,99E-03	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	1,25E+00
RSF	[MJ]	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
NRSF	[MJ]	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	3,58E+01
FW	[m ³]	3,21E-02	1,34E-04	4,41E-03	0,00E+00	4,27E-03	7,38E-06	1,00E-02	1,27E-04	3,20E-05	-9,90E-04	0,00E+00	-4,23E-03	-3,42E-03

PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; **PERM** = Use of renewable primary energy resources used as raw materials; **PERT** = Total use of renewable primary energy resources; **PENRE** = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; **PENRM** = Use of non-renewable primary energy resources used as raw materials; **PENRT** = Total use of non-renewable primary energy resources; **SM** = Use of secondary material; **RSF** = Use of renewable secondary fuels; **NRSF** = Use of non-renewable secondary fuels; **FW** = Use of net fresh water

Results for the LCA - Output flows and waste categories: 1 m² floor covering

Parameter	Unit	A1-A3	A4	A5	B1	B2	C2	C3/2	C3/3	C4/1	D/A5	D/1	D/2	D/3
HWD	[kg]	2,09E-07	9,57E-08	2,85E-08	0,00E+00	9,63E-10	5,29E-09	8,09E-09	1,02E-10	9,52E-09	-1,57E-09	0,00E+00	-6,77E-09	3,16E-09
NHWD	[kg]	4,37E-01	3,15E-04	9,68E-02	0,00E+00	5,63E-03	1,74E-05	6,26E-01	1,75E-04	2,50E+00	-1,81E-03	0,00E+00	-7,79E-03	-3,27E-01
RWD	[kg]	4,00E-03	2,54E-06	3,68E-04	0,00E+00	3,38E-04	1,41E-07	6,66E-05	3,74E-05	3,14E-05	-2,92E-04	0,00E+00	-1,25E-03	-1,64E-04
CRU	[kg]	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
MFR	[kg]	9,03E-03	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	1,25E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
MER	[kg]	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	1,26E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
EEE	[MJ]	0,00E+00	0,00E+00	1,01E+00	0,00E+00	0,00E+00	0,00E+00	4,53E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
EET	[MJ]	0,00E+00	0,00E+00	1,82E+00	0,00E+00	0,00E+00	0,00E+00	8,38E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00

HWD = Hazardous waste disposed; **NHWD** = Non-hazardous waste disposed; **RWD** = Radioactive waste disposed; **CRU** = Components for re-use; **MFR** = Materials for recycling; **MER** = Materials for energy recovery; **EEE** = Exported electrical energy; **EET** = Exported thermal energy

ENVIRONMENTAL PRODUCT DECLARATION

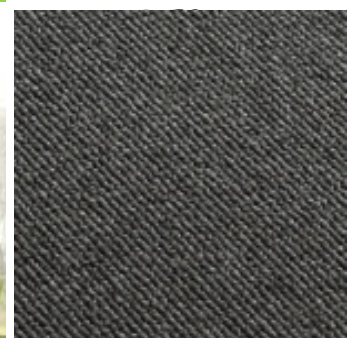
as per ISO 14025 and EN 15804+A1

Owner of the Declaration	Ege Carpets A/S
Programme holder	Institut Bauen und Umwelt e.V. (IBU)
Publisher	Institut Bauen und Umwelt e.V. (IBU)
Declaration number	EPD-EGE-20200165-CCC1-EN
Issue date	05/10/2020
Valid to	04/10/2025

Tufted broadloom carpet
pile material polyamide 6.6,
maximum total pile weight 1500 g/m²,
continuous dyeing method,
woven textile backing

Ege®

www.ibu-epd.com | <https://epd-online.com>



General Information

Ege®

Programme holder

IBU – Institut Bauen und Umwelt e.V.
Panoramastr. 1
10178 Berlin
Germany

Declaration number

EPD-EGE-20200165-CCC1-EN

This declaration is based on the product category rules:

Floor coverings, 02/2018
(PCR checked and approved by the SVR)

Issue date

05/10/2020

Valid to

04/10/2025



Dipl. Ing. Hans Peters
(chairman of Institut Bauen und Umwelt e.V.)



Dr. Alexander Röder
(Managing Director Institut Bauen und Umwelt e.V.)

Tufted broadloom carpet,
pile material PA 6.6, max. total pile weight 1500 g/m², continuous dyeing method, woven textile backing

Owner of the declaration

Ege Carpets A/S
Industrivej Nord 25
7400 Herning
Denmark

Declared product / declared unit

1 m² tufted broadloom carpet with a pile material of PA 6.6 and a woven textile backing

Scope:

The manufacturer declaration applies to a broadloom carpet with a total pile material of max. 1500 g/m² PA 6.6 and a woven textile backing. The carpet is produced in the Ege® manufacturing site Gram, Denmark.

LCA results for products with a maximum total pile weight of 400 g/m² can be taken from the corresponding tables of the annexe. Specific data for every product within the declared group of products in relation to its total pile weight can be calculated by using equation 1 given in the annexe (see annexe chapter: 'General Information on the annexe'). The declaration is only valid in conjunction with a valid GUT-PROD/IS license of the product.

The owner of the declaration shall be liable for the underlying information and evidence; the IBU shall not be liable with respect to manufacturer information, life cycle assessment data and evidences.

The EPD was created according to the specifications of *EN 15804+A1*. In the following, the standard will be simplified as *EN 15804*.

Verification

The standard *EN 15804* serves as the core PCR

Independent verification of the declaration and data according to *ISO 14025:2010*

☐ internally ☒ externally



Angela Schindler
(Independent verifier appointed by SVR)

Product

Product description/Product definition

Tufted broadloom carpet having a pile material of polyamide 6.6 and a woven textile backing. The surface layer is coloured by a continuous dyeing method.

The declaration applies to a group of products with a maximum total pile weight of 1500 g/m².

LCA results for products with a maximum total pile weight of 400 g/m² can be taken from the corresponding tables of the annexe.

Results for specific products with any other total pile weight can be calculated by using equation 1 given in

the annexe (see annexe chapter: 'General Information on the annexe').

For the placing on the market of the product in the European Union/European Free Trade Association (EU/EFTA) (with the exception of Switzerland) *Regulation (EU) No. 305/2011* Construction Product Regulation (CPR) applies. The product needs a Declaration of Performance (DoP) taking into consideration DIN *EN 14041*: 2008-05, Resilient, textile and laminate floor coverings - Essential characteristics and the CE-marking. The DoP of the product can be found on the manufacturer's technical

information section. For the application and use of the product the respective national provisions apply.

Application

According to the use class as defined in *EN 1307* the products can be used in professional areas. The use class can be found on the technical data sheet of the product.

Technical Data

The performance data listed in the DoP apply.

Name	Value	Unit
Product Form	Rolls of 4 m width	-
Type of manufacture	Tufted carpet	-
Yarn type	PA 6.6	-
Colouration	Continuous dyeing method	
Primary backing	90 % recycled PET	
Secondary backing	Woven textile backing made of PP	-
Total pile weight	1500	g/m ²
Total carpet weight	3260	g/m ²

Performance data of the product in accordance with the declaration of performance with respect to its essential characteristics according to *EN 14041*. Additional product properties in accordance with *EN 1307* can be found on the Product Information System *PRODIS* using the *PRODIS* registration number of the product (www.pro-dis.info) or on the manufacturer's technical information section (www.egecarpets.com).

Base materials/Ancillary materials

Name	Value	Unit
Polyamide 6.6	46.0	%
Polyester	3.7	%
Polypropylene	2.8	%
Mineral filler	17.3	%
Aluminum hydroxide	21.1	%
Polymer dispersion (solid content)	8.8	%
Additives	0.4	%

The products are registered in the GUT-*PRODIS* Information System. The *PRODIS* system ensures the compliance with limitations of various chemicals and Volatile Organic Compound (VOC)-emissions and a ban on the use of all substances that are listed as 'Substances of Very High Concern' (SVHC) under *REACH*.

This product contains substances listed in the *ECHA candidate list* (16.01.2020) exceeding 0.1 percentage by mass: no

Reference service life

A calculation of the reference service life according to *ISO 15686* is not possible.

The service life of textile floor coverings strongly depends on the correct installation taking into account the declared use classification and the adherence to cleaning and maintenance instructions.

A minimum service life of 10 years can be assumed, technical service life can be considerably longer.

LCA: Calculation rules

Declared Unit

Name	Value	Unit
Declared unit	1	m ²
Conversion factor to 1 kg	0.31	-
Mass reference	3.26	kg/m ²

The declared unit refers to 1 m² produced textile floor covering. The output of module A5 'Assembly' is 1 m² installed textile floor covering.

System boundary

Type of EPD: Cradle-to-grave

System boundaries of modules A, B, C, D:

Modules C3, C4 and D are indicated separately for three end-of-life scenarios:

- 1 landfill disposal
- 2 municipal waste incineration
- 3 recovery in a cement plant

A1-A3 Production:

Energy supply and production of the basic material, processing of secondary material, auxiliary material, transport of the material to the manufacturing site, emissions, waste water treatment, packaging material and waste processing up to the landfill disposal of residual waste (except radioactive waste). Benefits for generated electricity and steam due to the incineration of production waste are aggregated.

A4 Transport:

Transport of the packed textile floor covering from factory gate to the place of installation.

A5 Installation:

Installation of the textile floor covering, processing of installation waste and packaging waste up to the landfill disposal of residual waste (except radioactive waste), the production of the amount of carpet that occurs as installation waste including its transport to the place of installation.

Generated electricity and steam due to the incineration of waste are listed in the result table as exported energy.

Preparation the floor and auxiliary materials (adhesives, fixing agents, PET connectors) are beyond the system boundaries and not taken into account.

B1 Use:

Indoor emissions during the use stage. After the first year, no product- related Volatile Organic Compound (VOC) emissions are relevant due to known VOC decay curves of the product.

B2 Maintenance:

Cleaning of the textile floor covering for a period of 1 year:

Vacuum cleaning – electricity supply
Wet cleaning – electricity, water consumption, production of the cleaning agent, waste water treatment.

The declared values in this module have to be multiplied by the assumed service life of the floor covering in the building in question.

B3 - B7:

The modules are not relevant and therefore not declared.

C1 De-construction:

The floor covering is de-constructed manually and no additional environmental impact is caused.

C2 Transport:

Transport of the carpet waste to a landfill, to the municipal waste incineration plant (MWI) or to the waste collection facility for recycling.

C3 Waste processing:

C3-1: Landfill disposal needs no waste processing.

C3-2: The impact from waste incineration (plant with $R1 > 0.6$), generated electricity and steam are listed in the result table as exported energy.

C3-3: Collection of the carpet waste for recovery in the cement industry, waste processing (granulating).

C4 Disposal

C4-1: Impact from landfill disposal.

C4-2: The carpet waste leaves the system in module C3-2.

C4-3: The pre-processed carpet waste leaves the system in module C3-3.

D Recycling potential:

Calculated benefits result from materials exclusive secondary materials (net materials).

D-A5: Benefits for generated energy due to incineration of packaging and installation waste (incineration plant with $R1 > 0.6$),

D-1: Benefits for generated energy due to landfill disposal of carpet waste at the end-of-life,

D-2: Benefits for generated energy due to incineration of carpet waste at the end-of-life (incineration plant with $R1 > 0.6$),

D-3: Benefits for saved fossil energy and saved inorganic material due to recovery of the carpet in a cement plant at the end-of-life, transport from the reprocessing plant to the cement kiln.

Comparability

Basically, a comparison or an evaluation of EPD data is only possible if all the data sets to be compared were created according to *EN 15804* and the building context, respectively the product-specific characteristics of performance, are taken into account.

Background data are taken from the *GaBi database 2020*, service pack 40. Remaining data gaps are covered by the *ecoinvent 3.6 database 2019*.

LCA: Scenarios and additional technical information

The following information refer to the declared modules and are the basis for calculations or can be used for further calculations. The indicated values refer to the declared functional unit of all products with a total pile weight up to 1500 g/m².

Transport to the construction site (A4)

Name	Value	Unit
Litres of fuel (truck, EURO 0-6 mix)	0.0076	l/100km
Transport distance	700	km
Capacity utilisation (including empty runs)	55	%

Installation in the building (A5)

Name	Value	Unit
Material loss	0.29	kg

Polyethylene packaging waste and installation waste are considered to be incinerated in a municipal waste incineration plant.

Preparation of the floor and auxiliaries (adhesives, fixing agents, PET connectors, etc.) are not taken into account.

Maintenance (B2)

The values for cleaning refer to 1 m² floor covering used in commercial areas per year. Depending on the application based on *ISO 10874*, the technical service life recommended by the manufacturer and the anticipated strain on the floor by customers, the case-specific useful life can be established. The effects of Module B2 need to be calculated on the basis of this useful life in order to obtain the overall environmental impacts.

Name	Value	Unit
Maintenance cycle (wet cleaning)	1.5	1/year
Maintenance cycle (vacuum cleaning)	208	1/year
Water consumption (wet cleaning)	0.004	m ³
Cleaning agent (wet cleaning)	0.09	kg
Electricity consumption	0.314	kWh

Further information on cleaning and maintenance see www.egecarpets.com

End of Life (C1-C4)

Three different end-of-life scenarios are declared and the results are indicated separately in module C. Each scenario is calculated as a 100% scenario.

Scenario 1: 100% landfill disposal

Scenario 2: 100% municipal waste incineration (MWI) with $R1 > 0.6$

Scenario 3: 100% recycling in the cement industry

If combinations of these scenarios have to be calculated this should be done according to the following scheme:

EOL-impact = x% impact (Scenario 1)
 + y% impact (Scenario 2)
 + z% impact (Scenario 3)
 with $x\% + y\% + z\% = 100\%$

Name	Value	Unit
Collected as mixed construction waste (scenario 1 and 2)	3.26	kg
Collected separately (scenario 3)	3.26	kg
Landfilling (scenario 1)	3.26	kg
Energy recovery (scenario 2)	3.26	kg
Energy recovery (scenario 3)	2.01	kg
Recycling (scenario 3)	1.25	kg

**Reuse, recovery and/or recycling potentials (D),
relevant scenario information**

Recovery or recycling potentials due to the three end-of-life scenarios (module C) are indicated separately.

Recycling in the cement industry (scenario 3)

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The organic material of the carpet is used as alternative fuel in a cement kiln. It mainly substitutes for lignite (64.5%), hard coal (26.5%) and petrol coke (9.0%).

The inorganic material is substantially integrated into the cement clinker and substitutes for original material input.

LCA: Results

The LCA results refer to all declared products with a maximum total pile weight of 1500 g/m².

LCA results for products with a maximum total pile weight of 400 g/m² can be taken from the corresponding tables of the annexe. Results for specific products with any other total pile weight can be calculated by using equation 1 given in the annex (see annex chapter: 'General Information on the annex').

The declared result figures in module B2 have to be multiplied by the assumed service life (in years) of the floor covering in the building under consideration.

Information on un-declared modules:

Modules B3 - B7 are not relevant during the service life of the carpet and are therefore not declared. Modules C1, C3/1, C4/2 and C4/3 cause no additional impact (see chapter "LCA: Calculation rules" in this document) and are therefore not declared. Module C2 represents the transport for scenarios 1, 2 and 3. Column D represents module D/A5. The calculations are based on the CML characterization factors (version January 2016).

DESCRIPTION OF THE SYSTEM BOUNDARY (X = INCLUDED IN LCA; MND = MODULE NOT DECLARED; MNR = MODULE NOT RELEVANT)

PRODUCT STAGE			CONSTRUCTION PROCESS STAGE		USE STAGE							END OF LIFE STAGE				BENEFITS AND LOADS BEYOND THE SYSTEM BOUNDARIES
Raw material supply	Transport	Manufacturing	Transport from the gate to the site	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse-Recovery-Recycling-potential
A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
X	X	X	X	X	X	X	MNR	MNR	MNR	MND	MND	MND	X	X	X	X

RESULTS OF THE LCA - ENVIRONMENTAL IMPACT according to EN 15804+A1: 1 m² floor covering

Parameter	Unit	A1-A3	A4	A5	B1	B2	C2	C3/2	C3/3	C4/1	D	D/1	D/2	D/3
GWP	[kg CO ₂ -Eq.]	1.65E+1	1.94E-1	1.99E+0	0.00E+0	2.92E-1	1.08E-2	4.69E+0	1.80E-2	2.19E-1	-1.92E-1	0.00E+0	-1.80E+0	-5.40E-1
ODP	[kg CFC11-Eq.]	6.17E-8	3.19E-17	5.55E-9	0.00E+0	1.21E-8	1.77E-18	1.51E-15	5.35E-16	7.13E-16	-2.72E-15	0.00E+0	-2.53E-14	-3.22E-15
AP	[kg SO ₂ -Eq.]	2.18E-2	8.18E-4	2.45E-3	0.00E+0	1.16E-3	4.55E-5	4.46E-3	3.75E-5	5.96E-4	-2.42E-4	0.00E+0	-2.26E-3	-2.07E-3
EP	[kg (PO ₄) ³ -Eq.]	4.62E-3	2.05E-4	5.39E-4	0.00E+0	3.17E-4	1.14E-5	1.15E-3	4.15E-6	6.23E-4	-3.02E-5	0.00E+0	-2.82E-4	-2.41E-4
POCP	[kg ethene-Eq.]	3.03E-3	-3.45E-4	2.65E-4	6.29E-5	1.48E-4	-1.92E-5	2.68E-4	2.67E-6	6.73E-5	-2.21E-5	0.00E+0	-2.06E-4	-2.48E-4
ADPE	[kg Sb-Eq.]	1.69E-5	1.64E-8	1.53E-6	0.00E+0	4.43E-6	9.11E-10	1.17E-7	5.98E-9	4.26E-8	-3.59E-8	0.00E+0	-3.35E-7	-3.88E-7
ADPF	[MJ]	3.04E+2	2.64E+0	2.78E+1	0.00E+0	6.76E+0	1.47E-1	2.52E+0	1.98E-1	3.28E+0	-2.70E+0	0.00E+0	-2.52E+1	-5.55E+1

Caption: GWP = Global warming potential; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential of land and water; EP = Eutrophication potential; POCP = Formation potential of tropospheric ozone photochemical oxidants; ADPE = Abiotic depletion potential for non-fossil resources; ADPF = Abiotic depletion potential for fossil resources

RESULTS OF THE LCA - RESOURCE USE according to EN 15804+A1: 1 m² floor covering

Parameter	Unit	A1-A3	A4	A5	B1	B2	C2	C3/2	C3/3	C4/1	D	D/1	D/2	D/3
PERE	[MJ]	3.76E+1	1.49E-1	3.43E+0	0.00E+0	1.20E+0	8.28E-3	3.49E-1	1.42E-1	2.38E-1	-7.23E-1	0.00E+0	-6.74E+0	-7.37E-1
PERM	[MJ]	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0
PERT	[MJ]	3.76E+1	1.49E-1	3.43E+0	0.00E+0	1.20E+0	8.28E-3	3.49E-1	1.42E-1	2.38E-1	-7.23E-1	0.00E+0	-6.74E+0	-7.37E-1
PENRE	[MJ]	2.56E+2	2.65E+0	3.31E+1	0.00E+0	7.86E+0	1.47E-1	6.25E+1	6.01E+1	3.38E+0	-3.32E+0	0.00E+0	-3.10E+1	-5.60E+1
PENRM	[MJ]	6.36E+1	0.00E+0	-3.79E+0	0.00E+0	0.00E+0	0.00E+0	-5.98E+1	-5.98E+1	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0
PENRT	[MJ]	3.20E+2	2.65E+0	2.93E+1	0.00E+0	7.86E+0	1.47E-1	2.74E+0	3.21E-1	3.38E+0	-3.32E+0	0.00E+0	-3.10E+1	-5.60E+1
SM	[kg]	1.72E-1	0.00E+0	1.55E-2	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	1.25E+0
RSF	[MJ]	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0
NRSF	[MJ]	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	5.98E+1
FW	[m ³]	5.48E-2	1.72E-4	6.37E-3	0.00E+0	4.27E-3	0.59E-6	1.43E-2	1.64E-4	4.15E-5	-8.38E-4	0.00E+0	-7.80E-3	-5.16E-3

Caption: PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non-renewable primary energy resources used as raw materials; PENRT = Total use of non-renewable primary energy resources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water

RESULTS OF THE LCA – OUTPUT FLOWS AND WASTE CATEGORIES according to EN 15804+A1:

1 m² floor covering

Parameter	Unit	A1-A3	A4	A5	B1	B2	C2	C3/2	C3/3	C4/1	D	D/1	D/2	D/3
HWD	[kg]	3.44E-7	1.23E-7	4.33E-8	0.00E+0	9.63E-10	6.86E-9	8.52E-9	1.33E-10	1.24E-8	-1.32E-9	0.00E+0	-1.24E-8	2.91E-9
NHWD	[kg]	4.97E-1	4.06E-4	1.02E-1	0.00E+0	5.63E-3	2.26E-5	6.34E-1	2.27E-4	3.25E+0	-1.53E-3	0.00E+0	-1.43E-2	-3.28E-1
RWD	[kg]	6.33E-3	3.28E-6	5.78E-4	0.00E+0	3.38E-4	1.83E-7	8.73E-5	4.86E-5	4.08E-5	-2.47E-4	0.00E+0	-2.30E-3	-1.95E-4
CRU	[kg]	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0
MFR	[kg]	1.79E-2	0.00E+0	7.00E-2	0.00E+0	0.00E+0	0.00E+0	0.00E+0	1.25E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0
MER	[kg]	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	2.01E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0
EEE	[MJ]	0.00E+0	0.00E+0	8.58E-1	0.00E+0	0.00E+0	0.00E+0	8.05E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0
EET	[MJ]	0.00E+0	0.00E+0	1.56E+0	0.00E+0	0.00E+0	0.00E+0	1.47E+1	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0

Caption: HWD = Hazardous waste disposed; NHWD = Non-hazardous waste disposed; RWD = Radioactive waste disposed; CRU = Components for re-use; MFR = Materials for recycling; MER = Materials for energy recovery; EEE = Exported electrical energy; EEE = Exported thermal energy

References

EN 1307

DIN EN 1307: 2014+A1:2016: Textile floor coverings - Classification

EN 13501-1

DIN EN 13501-1:2010-01: Fire classification of construction products and building elements - Part 1: Classification using data from reaction to fire tests

EN 14041

DIN EN 14041: 2008-05: Resilient, textile and laminate floor coverings - Essential characteristics

EN 15804

EN 15804:2012-04+A1 2013/, Sustainability of construction works — Environmental Product Declarations — Core rules for the product category of construction products

EN 16810

DIN EN 16810: 2017-08: Resilient, textile and laminate floor coverings – Environmental product declarations – Product category rules

ISO 10874

DIN EN ISO 10874: 2012-04: Resilient, textile and laminate floor coverings - Classification

ISO 14025

DIN EN /ISO 14025:2011-10: Environmental labels and declarations — Type III environmental declarations — Principles and procedures

ISO 15686

ISO 15686: Buildings and constructed assets - Service life planning

ISO 15686-1: 2011-05: Part 1: General principles and framework

ISO 15686-2: 2012-05: Part 2: Service life prediction procedures

ISO 15686-7: 2006-03: Part 7: Performance evaluation for feedback of service life data from practice

ISO 15686-8: 2008-06: Part 8: Reference service life and service-life estimation

Regulation (EU) No. 305/2011

Regulation No. 305/2011 Construction Products Regulation (CPR) of the European Council and of the European Parliament, April 2011

CML

Institute of Environmental Sciences - in Dutch 'Centrum voor Milieuwetenschappen in Leiden' (CML), Leiden, The Netherlands

ECHA candidate list

Candidate List of substances of very high concern (SVHCs) from 16.01.2020, European Chemicals Agency (ECHA), Helsinki, Finland

ecoinvent 3.6

ecoinvent, Zurich, Switzerland, database version 3.6, published September 2019

GaBi database 2020

GaBi Software-System and Database for Life Cycle Engineering, thinkstep AG, Leinfelden-Echterdingen, service pack 40, 2020

IBU 2016

IBU (2016): General Programme Instructions for the Preparation of EPDs at the Institut Bauen und Umwelt e.V., Version 1.1 Institut Bauen und Umwelt e.V., Berlin, www.ibu-epd.de

PCR Part A

Product Category Rules for Construction Products from the range of Environmental Product Declarations. Part A: Calculation Rules for the Life Cycle Assessment and Requirements on the Background Report, V1.8, Berlin: Institut Bauen und Umwelt e.V. (IBU), July 2019

PCR Part B

Product Category Rules for Construction Products from the range of Environmental Product Declarations of Institut Bauen und Umwelt (IBU), Part B: Requirements on the EPD for floor coverings, V1.2, Berlin: Institut Bauen und Umwelt e.V. (IBU), February 2018

PRODIS

Product Information System (PRODIS) of the European Carpet Industry, Gemeinschaft umweltfreundlicher Teppichboden e.V (GUT) and European Carpet and Rug Association (ECRA), <http://www.pro-dis.info>

REACH

Regulation (EC) No 1907/2006 of the European Parliament and of the Council of 18 December 2006 concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH). Last update: 25.03.2014 (Status: 27.06.2018)

VDZ e.V.

Association of German Cement Works, Ed. Environmental Data of the German Cement Industry 2018

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Institut Bauen und Umwelt e.V.
Panoramastr. 1
10178 Berlin
Germany

Tel +49 (0)30 3087748- 0
Fax +49 (0)30 3087748- 29
Mail info@ibu-epd.com
Web www.ibu-epd.com

**Programme holder**

Institut Bauen und Umwelt e.V.
Panoramastr 1
10178 Berlin
Germany

Tel +49 (0)30 - 3087748- 0
Fax +49 (0)30 - 3087748 - 29
Mail info@ibu-epd.com
Web www.ibu-epd.com

**Author of the Life Cycle
Assessment**

Gemeinschaft umweltfreundlicher
Teppichboden (GUT) e.V.
Schönebergstraße 2
52068 Aachen
Germany

Tel +49 (0)241 96843 410
Fax +49 (0)241 96843 400
Mail mail@gut-ev.de
Web www.gut-ev.org

**Owner of the Declaration**

Ege Carpets A/S
Industrivej Nord 25
7400 Herning
Denmark

Tel +45 (0) 97 11 88 11
Fax +45 (0) 97 11 63 30
Mail ege@ege.dk
Web www.egecarpets.com